

REMARKS

General: In the following response, it is assumed per Examiners instructions, that the references to ("Tissue") is U.S. 5450202 ("Tisue"), that the reference to 5450202 issued to Nagayasu under paragraph 9 is 5164896 and that the reference "regarding claim 6" under paragraph 8 near the bottom of page 5 is actually claim 11.

Claims 5 to 14 are objected to for obviousness-type double patenting as being unpatentable over claims 1 to 12 of U.S. 6697683. A terminal disclaimer has been included to shorten the term of the instant application to correspond to that of U.S. 6697683 both the patent and application owned 100% by the applicant as sole inventor. For the record, Applicant believes that the instant application is substantially the same invention as the subject matter of said U.S. 6697683. In the conversation with Examiner, authorizing the Examiners amendment resulting is U.S. 6697683, Examiner asserted that the claims covered more than one invention, although the term "restriction" was not specifically used by Examiner. Applicant inquired about and believed that restriction was being required.

Claims 5 to 6 and 8 to 14 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. 5450202. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. 5450202. Applicant believes these objections are circumvented by the following arguments.

Regarding specific objections by Examiner in the office action:

Paragraph 7

Examiner objects to claims 5 to 14 as being anticipated by U.S. 6697683. Applicant asserts that execution of the Terminal Disclaimer removes the non-statutory double patenting rejection of claims 5 to 14 as being unpatentable over claims 1 to 12 of U.S. 6697683.

Paragraph 8

Regarding claim 5

Examiner objects to claim 5 under 35 U.S.C. 102(b) as being anticipated by U.S. 5450202 ("Tisue") and specifically asserts that Tisue teaches an agile positioner means responsive to an actual position of a substantially non-resonant load (col. 11 lines 42 to 47) ... Applicant submits that the reference in col. 11 lines 46 and 47 to a "low frequency (non-resonant) transfer function." is a reference to the explanation tool, used by Tisue, and called a "position equivalent drive" to explain the drive algorithm and does not relate to the response function or the nature of the actuator/load (see col. 11 lines 42 to 45). The "position equivalent drive" is the steady state relationship between the current drive and the resulting angular deflection independent of a specific resonant nature. This is also emphasized in col. 11 lines 47 to 50 where it states "after oscillations damp out."

The industry is replete with examples of this "low frequency (non-resonant) transfer function." concept. See, for instance, chapter 3 of Transformation Calculus and Electrical Transients by Goldman. Goldman teaches the concept of the separation of the transient solution from the steady state solution.

For further emphasis of this point, note that Fig. 18 of the referenced patent shows the highly oscillatory/resonant behavior expected. Additionally, the drive method described in col. 10 lines 30 to 52 results in the formula of col. 10 lines 47 and 48 for the solution of the motion. That formula, which is a keystone of U.S.5450202, would be incorrect and inapplicable if the system were non-resonant. Note also, in said formula, that the expected (see col. 11 lines 50 to 58) overshoot of 90% to 99% is also indicative of a highly un-damped and resonant configuration. A non-resonant device has negligible overshoot; i.e. ~0% not 90% to 99% overshoot.

The specification and claims of the cited reference repeatedly refer to a resonant positioner and no reference to a non-resonant actuator exists in the entirety of the specification or claims. Furthermore, as would be obvious to one skilled in the art, the

concepts in the cited reference would be non-functional for a non-resonant actuator and load. In the light of the foregoing, Applicant asserts that the subject matter of the cited reference is clearly related to the class of resonant actuators and loads and teaches nothing of non-resonant devices.

In contrast, claim 5 contains no reference to a resonant positioner and would in fact be substantially non-functional for a resonant load. The subject matter of claim 5 is clearly related to the class of non-resonant actuators and loads.

Applicant therefore submits that claim 5 does not teach positioners of non-resonant loads and is allowable over the cited reference and solicits reconsideration and allowance.

Regarding Claim 6

Applicant submits that dependent claim 6 is patentable for the same reasons given with respect to claim 5 and is only narrowed by its restriction of a linearly moveable actuator. Applicant notes that the reference to a linear actuator serves the purpose to narrow the claim and that the restriction to a linear actuator would be sufficiently obvious to anyone skilled the art that no patentability significance would occur. Applicant submits that claim 6 is allowable over the cited reference and solicits reconsideration and allowance.

Regarding Claim 8

Examiner has objected to claim 8 based on the equal and opposite pulses of cited reference at column 6 lines 44 to 51. Applicant submits that this reference is not relevant because the equal and opposite pulses referred to in the cited reference relate to sensor integration pulses used to determine the actuator position and the substantially equal pulses opposite in polarity referred to in claim 8 of the present disclosure relate to values of drive within an open loop sequence as defined in the specification; two unrelated functions.

Applicant submits that dependent claim 8 is patentable for the same reasons given with respect to claim 5 and is only narrowed by its restriction to equal and opposite drive

pulses. Applicant further submits that claim 8 is allowable over the cited reference and solicits reconsideration and allowance.

Regarding Claim 9

Examiner has objected to claim 9 based on the equal and opposite pulses of the cited reference at column 6 lines 44 to 62. Applicant submits that this reference is not relevant because the equal and opposite pulses referred to in the cited reference relate to sensor integration pulses used to determine the actuator position and the substantially equal pulses opposite in polarity referred to in claim 9 of the present disclosure relate to values of drive within an open loop sequence as defined in the specification; two unrelated functions.

Applicant submits that dependent claim 9 is patentable for the same reasons given with respect to claim 5 and is only narrowed by its restriction to equal and opposite drive pulses with further constraints on width and timing. Applicant further submits that claim 9 is allowable over the cited reference and solicits reconsideration and allowance.

Regarding claim 10

Examiner has objected to claim 10 based on the referenced patent teaching a velocity term. Applicant notes that the referenced col. 11 lines 3 to 13 do not refer to a velocity term, but rather to a stated velocity of zero. In the referenced patent, no suggestion is made of the action to be taken if the velocity were not zero, nor any implication that it might be other than zero. Oppositely, in the instant application, the inclusion of a "velocity term," for one skilled in the art, would imply non-zero and variable values of velocity. Applicant therefore asserts that the referenced patent does not teach a velocity term. Applicant submits that dependent claim 10 is patentable for the same reasons given with respect to claim 5 and is only narrowed by the inclusion of a velocity term in its drive computation. Applicant further submits that claim 10 is allowable over the cited reference and solicits reconsideration and allowance.

Regarding Claim 11

Examiner has objected to claim 11 based on a constant time interval of cited reference at col. 10 lines 59 to 63. Applicant notes that constant or non constant time intervals do not constitute patentable significance unless they perform a unique and similar function. In this instance, "constant resonance-dependent intervals" have no significance because a non-resonant device has **no** resonant frequency of significant interest to the operation of the instant application. Furthermore, claim 11 refers to a "positioner cycle" not a "position" or a "position of the pattern." The instant application has antecedence for both terms, for instance, on page 7 lines 7 to 10 and both applications use the "position of a pattern" but U.S. 5450202 does not mention or teach "positioner cycles" which are components of "positions" and identifiably different in function.

Applicant submits that dependent claim 11 is patentable for the same reasons given with respect to claims 5 and 10, and is only narrowed by its restriction to a constant positioner cycle interval. Applicant further submits that claim 11 is allowable over the cited reference and solicits reconsideration and allowance.

Regarding claim 12

Applicant submits that dependent claim 12 is patentable for the same reasons given with respect to claims 5 and 10 and is only narrowed by its restriction to a digital sensor and interpolation. Applicant further submits that claim 12 is allowable over the cited reference and solicits reconsideration and allowance.

Regarding claim 13

Applicant submits that dependent claim 13 is patentable for the same reasons given with respect to claims 5, 10 and 12 and is only narrowed by its restriction to continuously emitted light. Applicant further submits that claim 13 is allowable over the cited reference and solicits reconsideration and allowance.

Regarding claim 14

Applicant submits that dependent claim 14 is patentable for the same reasons given with respect to claims 5, 10 and 12 and is only narrowed by its restriction to pulsed emitted light. Applicant further submits that claim 14 is allowable over the cited reference and solicits reconsideration and allowance.

Paragraph 9

Regarding claim 7

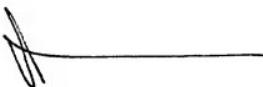
Examiner has objected to claim 7 based on the referenced patent teaching the inclusion of an analog sensor by implication for one skilled in the art. Claim 7 of the instant application simply declares that the sensor would not be limited to digital sensors such as CCDs. Applicant also notes that the term analog sensor is a somewhat imprecise term to one skilled in the art since a CCD is analog in the amplitude domain but digital in the spatial domain while other sensors may be digital or analog in both domains. Applicant acknowledges Examiners "Official Notice" regarding the concept and advantages of analog sensors and agrees that anyone skilled in the art would include analog sensors in the candidates for the position sensor in either the instant application or the referenced patents. Therefore it is clear that the reference in claim 5 to a "sensing means responsive to ... an actual position signal" would include an analog sensor without specific antecedence in the specification. Applicant submits that dependent claim 7 is patentable for the same reasons given with respect to claim 5 and is only narrowed by its restriction to analog sensors. Applicant further submits that claim 7 is allowable over the cited reference and solicits reconsideration and allowance.

Conclusion

Since the operation of the structures in claims 5 to 14 and the cited reference are diametrically opposed regarding resonant vs non-resonant and differ in the organizational form of feedback, in fact, being non-functional for actuator/loads of the mutually opposite type, no anticipation of the present invention would be indicated. Applicant submits that the specification and claims are now in proper form, and that the claims all

define patentably over the prior art. Applicant submits that this application is now in condition for allowance and respectfully solicits same.

Respectfully submitted,



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Date 11-4-04

Inventors Signature 